

A Project of
The Sacramento Valley
Water Management Agreement

GCID Feasibility Study Regulatory Reservoirs and Off-Canal Storage



PREPARED FOR
**PROPOSITION 13
AGRICULTURAL FEASIBILITY STUDY PROGRAM**

March 1, 2002

Consolidated Water Use Efficiency 2002 PSP
Proposal Part One:
A. Project Information Form

1. Applying for (select one): ☐ (a) Prop 13 Urban Water Conservation Capital Outlay Grant
☒ (b) Prop 13 Agricultural Water Conservation Capital Outlay Feasibility Study Grant
☐ (c) DWR Water Use Efficiency Project
2. Principal applicant (Organization or affiliation): Glenn-Colusa Irrigation District
3. Project Title: Glenn-Colusa Irrigation District (GCID or District)
Regulatory Reservoirs and Off-canal Storage
Feasibility Study to Address Quantifiable Objectives
13, 20, 27, 30, and 35
4. Person authorized to sign and submit proposal:
- | | |
|-----------------|--|
| Name, title | <u>O.L "Van" Tenney, General</u>
<u>Manager</u> |
| Mailing address | <u>P.O. Box 150, Willows, CA</u>
<u>95988</u> |
| Telephone | <u>530/934-8881</u> |
| Fax. | <u>530/934-3287</u> |
| E-mail | <u>vtenney@gcid.net</u> |
5. Contact person (if different):
- | | |
|------------------|--------------------|
| Name, title. | <u></u>
<u></u> |
| Mailing address. | <u></u>
<u></u> |
| Telephone | <u></u> |
| Fax. | <u></u> |
| E-mail | <u></u> |
6. Funds requested (dollar amount): \$100,000
7. Applicant funds pledged (dollar amount): \$112,000
8. Total project costs (dollar amount): \$865,000

**Consolidated Water Use Efficiency 2002 PSP
Proposal Part One:
A. Project Information Form (continued)**

9. Estimated total quantifiable project benefits (dollar amount): To be determined by the feasibility study
- Percentage of benefit to be accrued by applicant: 100 percent of the water supply
- Percentage of benefit to be accrued by CALFED or others: _____
10. Estimated annual amount of water to be saved (acre-feet): To be determined by the feasibility study
- Estimated total amount of water to be saved (acre-feet): Estimated to be in the range of 5,000-35,000 ac-ft/year
- Over ____ years
- Estimated benefits to be realized in terms of water quality, instream flow, other: _____
11. Duration of project (month/year to month/year): October 2002 to December 2003
12. State Assembly District where the project is to be conducted: Assembly District 2
13. State Senate District where the project is to be conducted: Senate District 4
14. Congressional district(s) where the project is to be conducted: Congressional District 3
15. County where the project is to be conducted: Easterly half of Glenn, Colusa, and Yolo Counties
16. Date most recent Urban Water Management Plan submitted to the Department of Water Resources: _____
17. Type of applicant (select one):
Prop 13 Urban Grants and Prop 13
Agricultural Feasibility Study Grants:
- ☐ (a) city
☐ (b) county
☐ (c) city and county
☐ (d) joint power authority
☒ (e) other political subdivision of the State, including public water district
☐ (f) incorporated mutual water company
- DWR WUE Projects: the above entities (a) through (f) or:
- ☐ (g) investor-owned utility
☐ (h) non-profit organization
☐ (i) tribe
☐ (j) university

**Consolidated Water Use Efficiency 2002 PSP
Proposal Part One:
A. Project Information Form (continued)**

- ☐ (k) state agency
☐ (l) federal agency
18. Project focus: ☒ (a) agricultural
☐ (b) urban
19. Project type (select one):
Prop 13 Urban Grant or Prop 13
Agricultural Feasibility Study Grant
capital outlay project related to:
- ☐ (a) implementation of Urban Best
Management Practices
- ☐ (b) implementation of Agricultural
Efficient Water Management Practices
- ☒ (c) implementation of Quantifiable
Objectives (include QO number(s))
13, 20, 27, 30, and 35
- ☐ (d) other (specify)

- DWR WUE Project related to:
- ☐ (e) implementation of Urban Best
Management Practices
- ☐ (f) implementation of Agricultural Efficient
Water Management Practices
- ☐ (g) implementation of Quantifiable
Objectives (include QO number(s))
- ☐ (h) innovative projects (initial investigation of
new technologies, methodologies,
approaches, or institutional frameworks)
- ☐ (i) research or pilot projects
- ☐ (j) education or public information programs
- ☐ (k) other (specify)

20. Do the actions in this proposal involve
physical changes in land use, or
potential future changes in land use? ☐ (a) yes
☒ (b) no

If yes, the applicant must complete the
CALFED If yes, the applicant must complete
the CAL PSP Land Use Checklist found at
http://calfed.water.ca.gov/environmental_docs.htm
and submit it with the proposal.


**Consolidated Water Use Efficiency 2002 PSP
Proposal Part One:
B. Signature Page**

By signing below, the official declares the following:

The truthfulness of all representations in the proposal;

The individual signing the form is authorized to submit the proposal on behalf of the applicant; and

The individual signing the form read and understood the conflict of interest and confidentiality section and waives any and all rights to privacy and confidentiality of the proposal on behalf of the applicant.


Signature

O.L. "Van" Tenney, General Manager
Name and title

3-1-2002
Date

Proposal Part Two

Project Summary

The goal of this project is to increase water use efficiency through reduction of operational spills, by taking advantage of storm peaks, and utilizing excess winter flows. This feasibility study will investigate the viability of adding off-canal storage and regulating reservoirs to GCID's conveyance system to achieve that goal.

The feasibility study would address basic project components that would be essential to design (e.g. site location, feasible storage capacities), construction (e.g., environmental surveys, permitting), and implementation (e.g., public involvement) of a successful project.

GCID is located in the central portion of the Sacramento Valley on the west side of the Sacramento River. Figure 1 provides a general layout of the District's boundaries and potential project sites.

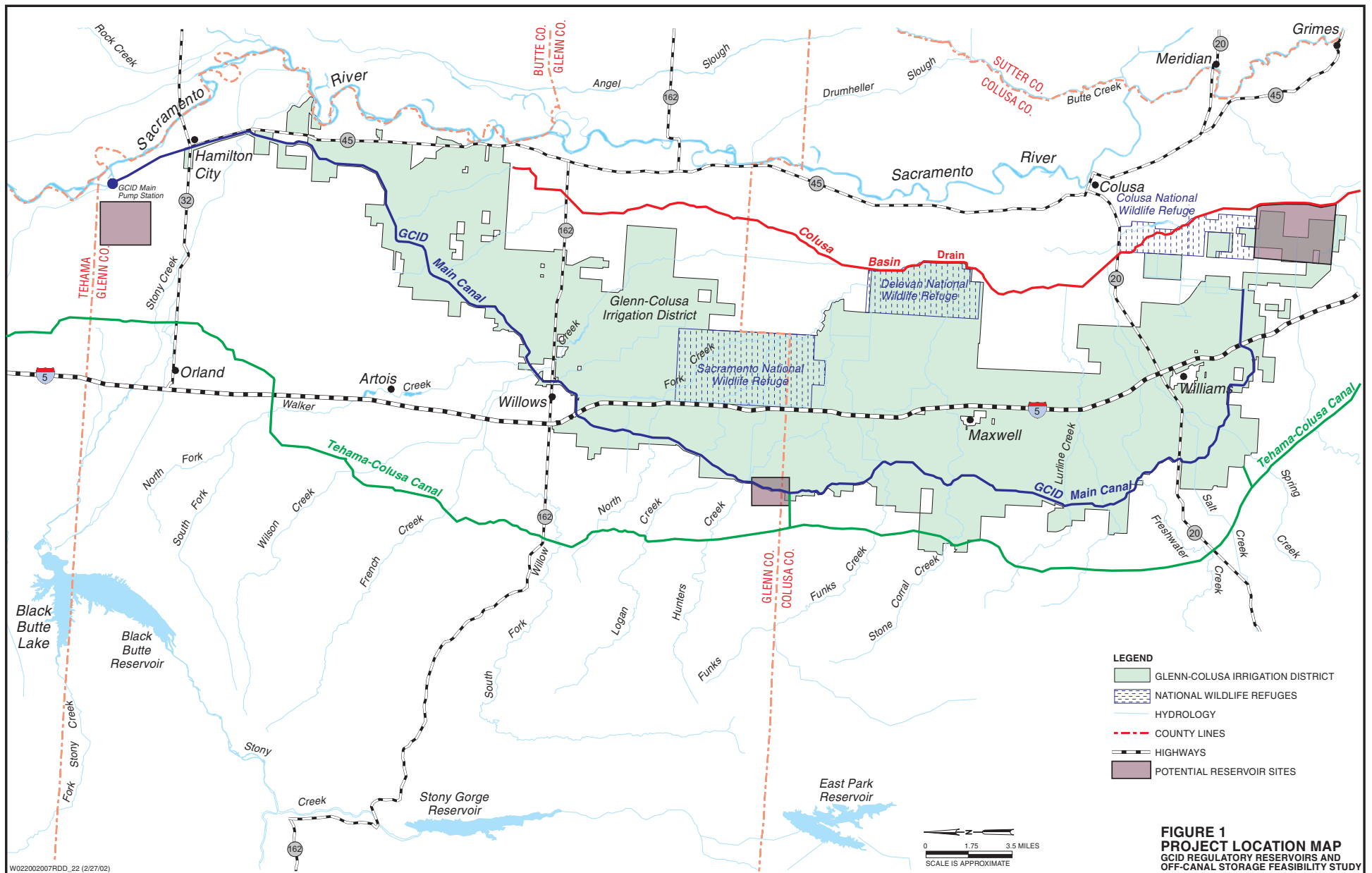
The District's service area extends from northeastern Glenn County near Hamilton City to south of Williams in Colusa County. The west side of the District stretches toward the Coast Range and Tehama-Colusa Canal (TC Canal). Encompassing 175,000 acres, GCID is the largest irrigation district not only in the Colusa Sub-basin, but also in the Sacramento Valley itself. Its main facilities include a 3,000-cubic-feet-per-second (cfs) pumping plant and fish screen structure, a 65-mile Main Canal, and approximately 900 miles of laterals and drains. The extensive canal system conveys water year-round as part of its commitment to its stakeholders and neighboring wildlife refuges.

The estimated \$865,000 (GCID will assume \$112,000 of cost) proposed feasibility study is expected to lead to the development of a large-scale project that would produce direct water supply, water management, water quality, and environmental benefits. Water supply benefits are predicated on the conclusions of the study, but potentially could be on the order of 5,000 to 35,000 acre-feet per year (ac-ft/yr.) in direct supply (i.e. not including potential drainwater reuse.) Regulating reservoirs and off-canal storage will improve management of existing water supplies by accumulating pulse flows. Water quality benefits would generally stem from increased in-stream flows and water retention. Potential environmental benefits that have been identified thus far include increased supply to the Sacramento-San Joaquin Delta, improved aquatic/riparian habitat, and more reliable supply to wildlife refuges.

A. Scope of Work: Relevance and Importance

1. Nature, Scope, and Objectives

One of CALFED's target goals, highlighted in Detail 13 of the Quantifiable Objectives, is to reduce critical- or dry-period diversions at the Glenn-Colusa Irrigation District (GCID) intake from the Sacramento River by 951.0 acre feet. GCID shares this goal, and supports attainment of this objective through this effort in conjunction with ongoing efforts



throughout the District. GCID's primary goals for this feasibility study are to (1) develop a project to reduce the District's diversion from the Sacramento River during March, April, and May; (2) provide flexibility to increase the District's water supply for beneficial uses; and (3) provide instream flow to improve aquatic ecosystem conditions. These primary goals would be achieved by reducing instream diversions from the Sacramento River and Delta during critical fish migration periods and making more efficient use of the District's drainage flows both within and outside the District. The project is a study to evaluate the technical and economic feasibility of developing two offstream water storage/regulating facilities and associated conveyance systems. This project is currently in its early stages of investigation with funding received from the 2001 round of DWR Water Use Efficiency Grants. However, the project requires additional funding to proceed.

This project will address Quantifiable Objectives 13, 20, 27, 30, and 35 by providing flow to improve aquatic ecosystem conditions and by providing long-term diversion flexibility to increase the water supply for beneficial uses. Project water-quality improvements, including reduced contaminants and salinity, would directly benefit downstream water users, anadromous fish, and other aquatic species. Regulating Colusa Basin Drain (CBD) pulse flows, which act as attraction flows to anadromous fish, would reduce entrainment of potential adult spawners into CBD. The reservoirs would provide additional supply of stored water for rice straw decomposition in the fall, reducing river demands during October, November, and December, and enhancing wetland habitat for migratory waterfowl and other wetland and aquatic species.

Regulating Reservoirs and off-canal storage could improve management of existing water supplies by storing excess flows that may be made available throughout the system (during periods of lower demand). The storage reservoirs would be able to exploit high winter flows, stormwater waves that undulate down District lands, and stormwater peaks. Further project components could reduce peak drain outflows, improve water quality by blending, and allow more efficient reuse of drain flows. The proposed project consists of three possible components: (1) upstream regulating/storage and conveyance facilities between Hamilton City and Orland; (2) a regulating reservoir and conveyance facilities located west of Maxwell to store and regulate canal flows; and (3) a regulating/storage reservoir and conveyance facilities located near the Davis Weir on CBD.

The project objective seeks to optimize and integrate water supplies and reduce annual Sacramento River diversions and peak diversions during March, April, May, October, November, and December through surface supply, and drainwater. This would result in a more secure, reliable, and flexible water supply for the GCID and neighboring districts. The project would reduce diversion from the Sacramento River (CALFED Quantifiable Objectives 13, 20, and 30) and provide long-term diversion flexibility to increase the water supply for beneficial uses (CALFED Quantifiable Objectives 25 and 35).

The primary objectives include improving system efficiency, resulting in a more secure water supply, which would improve water quality to benefit aquatic species and habitats and create and restore wetlands habitat for migratory waterfowl and other wildlife. Releases of stored water during fall, winter, and early spring would enable the District to reduce flows through the GCID Main Pump Station (MPS) fish screens when migrating salmon are present in fall.

The reservoirs could provide additional water for rice straw decomposition and enhanced wetland habitat for migratory waterfowl and other wetland and aquatic species.

2. Critical Local, Regional, Bay-Delta, State, or Federal Water Issues

The key CALFED issue is to optimize and integrate all water supplies to reduce annual Sacramento River diversions and peak diversions during March, April, May, October, November, and December through surface supply, and drainwater. GCID objectives include optimizing its available water supply and improving water quality to promote CALFED goals of fish, wildlife, and habitat enhancement and restoration.

The proposed project was identified in the Short-term Workplan developed as part of the Sacramento Valley Water Management Agreement (Agreement). This unprecedented agreement was developed by Sacramento Valley water users, export interests, the California Department of Water Resources (DWR), and U.S. Bureau of Reclamation (USBR) as an alternative to a potentially contentious process within Phase 8 of the State Water Resources Control Board (SWRCB) Bay-Delta Water Rights Hearings. The intent of the Agreement is to establish a framework to meet water supply, water quality, and environmental needs through a cooperative project development process. Each of the water system improvement projects evaluated under the Agreement, including the project described below, would provide benefits toward achieving at least one of four quantifiable objectives:

- (1) Provide flow to improve aquatic ecosystem conditions
- (2) Decrease nonproductive evapotranspiration (ET)
- (3) Provide long-term diversion flexibility to increase the water supply for beneficial uses
- (4) Reduce salinity to enhance and maintain beneficial uses of water.

Further, the proposed project is an outgrowth of the ongoing Sacramento River Basinwide Water Management Plan (BWMP) being developed by the Sacramento Valley Settlement Contractors in cooperation with the California Department of Water Resources (DWR) and U.S. Bureau of Reclamation (Reclamation). The BWMP is specifically identified by the Agreement as a “model” to follow across the entire Sacramento Valley. The GCID feasibility study supports the objectives of the BWMP, including providing sustainable water supplies across the Sacramento River basin, maximizing environmental benefits, and enhancing partnership opportunities.

GCID has long been involved in state and federal programs that promote CALFED objectives and has support from a variety of local agencies, landowners, and other stakeholder groups. The fish screen projects and refuge water supply projects, developed in cooperation with state and federal agencies with state and federal funding, directly benefit anadromous fish and provide wetlands enhancement. Other CALFED-compatible programs that GCID participates in include the Stony Creek Task Force, BDAC, SB 1086, Sacramento River Watershed Planning, Inland Surface Water Plan, AB 3616, AB 3030, and Tehama-Colusa Canal Authority (TCCA) supply proposals. All of these programs have the ability to provide information that could contribute to the proposed project. This information has contributed to developing the BWMP and the Agreement. Potential project supporters and collaborators include California Department of Fish and Game (CDFG), U.S. Fish and Wildlife Service (USFWS), Reclamation, Regional Water Quality Control Board (RWQCB), DWR, TCCA, Orland Unit Water Users’ Association, Glenn and Colusa counties, Reclamation District

2047, Princeton-Codora-Glenn Irrigation District, Provident Irrigation District, Maxwell Irrigation District, and other basin water users.

B. Scope of Work: Technical/Scientific Merit, Feasibility, Monitoring, and Assessment

1. Methods, Procedures, and Facilities

The study will be performed under the following tasks:

- Task 1 – Contract Management and Administration
- Task 2 – Data Collection and Coordination with Other Studies
- Task 3 – Develop Mapping
- Task 4 – Modeling
- Task 5 – Evaluate Project Alternatives
- Task 6—Evaluate Alternatives
- Task 7 – Prepare Implementation Schedule
- Task 8 – Develop Cost Estimates
- Task 9 – Legal/Regulatory/Environmental Reconnaissance
- Task 10 – Feasibility Report

The District must take an action-specific approach to determine how much drainwater can be recaptured in addition to optimizing capture of winter storm flows. The proposed study would enable the District to more accurately quantify the flow that can be provided to the Sacramento River/Delta system to improve aquatic ecosystem conditions. The success of this project, would be enhanced through cooperative efforts between the District and adjacent districts and landowners.

Methods: The objectives of this project are to reduce diversion from the Sacramento River (CALFED Quantifiable Objectives 13, 20, and 30) and provide long-term diversion flexibility to increase the water supply for beneficial uses (CALFED Quantifiable Objectives 27 and 35). This project would identify proposed actions and provide a rough estimate of the corresponding contribution towards a quantifiable objective. The project's components, costs, right-of-way requirements, partners (if any), and benefits cannot currently be specifically identified. The objectives of this study are to develop these specific details, using the first specific approach in Phase 1, Pre-design, and the quantifiable approach in subsequent phases.

The action-specific approach to achieving these goals would be to conceptually develop the three reservoirs and associated conveyance facilities. The proposed feasibility study would be a necessary step in developing these facilities. Information that the feasibility study would provide includes the total surface-water supply, including the District's water rights and potentially recaptured peak flows from CBD. Drain flow volume and hydrologic data would be compiled and evaluated. Various storage and conveyance facility alternatives would be evaluated. The three storage/regulation facilities, associated components, and operating characteristics are described below.

Procedures: The study would evaluate the feasibility of developing three offstream water storage/regulating facilities and associated conveyance systems to optimize beneficial uses of GCID's water resources.

Any seasonal excesses of diverted water and excess peak drainage flows from CBD could be pumped to the proposed reservoirs and stored for future releases during critical times of the year. This study would determine how much additional water supply could be developed, how much surface supply could be freed up in the Sacramento River, the optimal timing to divert specific quantities of river water, water demands, water quality of discharged drainwater, blending of water sources, and other benefits. Alternatives would be developed and screened and flexibility and reliability, capital costs, operational scenarios and costs, and institutional issues would be addressed.

Facilities: The various project components would include regulating and storage basins, pump stations and pipelines, monitoring systems, and related facilities. The proposed facilities for each of the three projects are described below. Water would be pumped from the District's MPS forebay to a regulating reservoir. The reservoirs would be filled with surplus water diverted at the MPS.

The most **upstream storage reservoir** would consist of the following project components: 200- to 600- cfs pump station located in the GCID Main Pump Station Forebay, a 6- to 9-foot-diameter pipeline, and a regulating/storage/recharge reservoir. The storage regulating facility would ideally be located north of Highway 32, between the GCID Canal and the TCCA Canal. In addition, flow measurement and water quality monitoring facilities would be at various system locations to measure flows into and out of the system.

The **mid-system (Maxwell) regulating reservoir** facilities would include flow volume and water quality monitoring instrumentation, and pump stations to pump waters tributary to CBD to the reservoir and from the reservoir to the District's main canal. The facility would also be used as a peaking reservoir in the spring and fall to store excess drainwater. This reservoir and conveyance system would recapture drainwater and other surface runoff for various beneficial uses. The mid-system reservoir would also reduce uncontrolled drain outflows and peak flows, improve water quality by serving as a sediment catch basin, enhance water conservation and overall system efficiency, reduce deliveries at the District's MPS (thereby reducing some of the need to divert Sacramento River Water), and create wetlands and waterfowl habitat in and around the new reservoir. A key benefit of this reservoir would be the ability to transfer stored water to wildlife refuges and rice decomposition fields to reduce diversion from the Sacramento River in the fall.

The **downstream (Davis) storage reservoir** facilities would include a pump station on CBD, improvements to the existing lateral canal from the District's main canal, a CBD bypass, an outlet control system, and water quality and flow volume monitoring instrumentation. Water would be conveyed to the reservoir by gravity flow and pumping from CBD, and by gravity flow from the District's main canal. Water from these sources could be blended. The reservoir would help regulate peak flows from CBD and equalize the year-round flow to provide more assurance to basin users of adequate water supply. Reducing peak flows would reduce attraction flows and anadromous fish entrainment into CBD. Entrainment occurs at the Knight's Landing CBD outfall upstream of Sacramento. Other benefits of the lower

regulating reservoir include improved water quality, created waterfowl and wetlands habitat in the new reservoir, improved water conservation, and enhanced system efficiency.

Technical and Scientific Merit of Approach: Among project objectives are to optimize use of the District's water resources; level CBD peak flows (which would reduce pulse flows that attract and entrain anadromous fish); improve water quality; reduce flows at the MPS at times when juvenile fish are present; and recaptured drainwater.

The feasibility study would address portions of a larger watershed management program. The program includes the fish screen, a conservation program, the rice straw decomposition program, baseline fish passage studies, the Central Valley Project Improvement Act (CVPIA) Anadromous Fishery Restoration Program (AFRP), and the wildlife refuge year-round water supply conveyance program. The fish screen and refuge conveyance projects used state and federal funding, some of which was authorized under the CVPIA. To date, GCID has committed to cost-share in the \$20 million refuge water supply program and has advanced nearly \$9 million of District funds to the \$70 million fish screen project. Partners in the fish screen project include CDFG, Reclamation, DWR, the U.S. Army Corps of Engineers (Corps), USFWS, and National Marine Fisheries Service (NMFS).

The District participates in the following programs that promote habitat restoration or support other CALFED programs: BWMP, Stony Creek Task Force, SB 1086, Sacramento River Watershed Planning, Inland Surface Water Plan, AB 3616, AB 3030, BDAC, a potential Glenn County Water Management Model and Conservation Plan, and TCCA water supply/storage proposals.

The proposed regulating reservoir system, along with the interrelated projects and programs listed above, would contribute to the ability of the District to provide year-round, secure water conveyance to the wildlife refuges and other water users. Completion of the fish screen project enables the District to divert its entire water supply, and the proposed reservoir project would contribute to optimizing efficiency of the District's system. The regulating reservoirs would provide:

- Equalization of CBD pulse flows
- Reduced entrainment of all four anadromous salmonid runs
- Increased year-round conveyance capabilities for the refuges and rice straw decomposition flooding
- Catch-basins for trapping sediment and reducing salinity and other contaminants
- Constructed wetland habitat in the new reservoirs

2. Task List and Schedule

The scope of this project includes identifying the necessary facilities including reservoirs, and conveyance facilities, and determining how these facilities will operate to achieve the project objectives. The proposed tasks are listed below.

Task 1—Contract Management and Administration: This task includes managing project budget and schedule; administering grant funds; developing work plans; coordinating with

other initiatives and agencies; attending meetings with agencies, landowners, and other districts; coordinating and overseeing the activities of the project team; communicating with agency staff; and providing financial and technical reports to CALFED. The applicant would prepare monthly reports summarizing the degree of completion, activities during the reporting period, costs incurred, and major upcoming milestones.

Task 2—Data Collection and Coordination with Other Studies: Review existing reports, data, mapping, water rights, and other related information, generated by DWR, Reclamation, and other federal, state, and local agencies, regarding Stony Creek water supply, and CBD. GCID would compile water quality and flow data on its Sacramento River diversion and drain system. Other needed information includes water quality data in CBD and other areas of potential discharge. DWR, Reclamation, and other agencies may review the need for offstream storage that may require the use of District lands or facilities. The District would coordinate with other agencies and programs to implement the project.

Task 3—Develop Mapping: CAD and GIS data, recent aerial photography, and recent survey data will be used to compile photogrammetric base topographic mapping of identified areas of the GCID system. Mapping will be utilized for modeling input and conceptional design drawings.

Task 4—Modeling: A hydraulic model of the main components of the GCID delivery system including, but not limited to the headgates, Main Canal, major check structures, major laterals and drains, will be developed under this task. It is assumed that most of the input data for the model will be obtained from a combination of existing sources including HEC-2 files of the Main Canal and design drawings of the canal and major structures. Further, this task is expected to incorporate ongoing modeling efforts including the GCID study to evaluate alternatives for using GCID's conveyance facilities to provide supply to a future Sites Reservoir. This study will produce a HEC-RAS hydraulic model of the District's Main Canal from the headgates to approximate Main Canal Mile Post 45. The model development will require GCID survey crews to provide cross-sectional data at various locations throughout the District. District staff assistance and review are expected for refining and calibrating the hydraulics model based on typical operations measurements of flows and canal water levels.

Task 5—Develop Project Alternatives: Alternatives would be developed for storing water in the upper, middle, and lower parts of the District. This would involve determining the types of facility components needed, such as drainwater return and water supply pump stations, pipelines or canals, flow regulation reservoirs, flow and water quality monitoring facilities, inlet/outlet structures, and other canal structures.

Each component would be sized for various flow criteria and multiple uses, where appropriate, and the degree of water quality enhancement obtainable. Technical Memoranda would be prepared under this task and would include all data compiled in Tasks 2 through 4.

Task 6—Evaluate Alternatives: Each alternative would be evaluated against the following criteria and other criteria to be developed:

- Overall ecological benefits
- How the system would be operated

- Flexibility in providing water within and outside the District
- Compatibility with the rice decomposition program and winter waterfowl habitat programs
- Water quality improvement, including salinity
- Reduction of peak flows and resulting approach velocities at the District's MPS fish screens during the quantified flow target periods of March, April, May, October, November, and December when fall-run, spring-run, and winter-run chinook salmon juveniles are present
- Reduction of pulse flows in CBD
- Reduction in drainwater leaving the District
- Third-party impacts
- Water rights impacts
- Ability to permit

Each of the alternatives would be evaluated for its ability to improve conditions for fish and wildlife, compatibility with the District's existing systems, and its ability to meet other goals of the project. A "No Project Alternative" would also be included in the evaluation. "Order of Magnitude" cost estimates would be prepared for the apparently viable alternatives. The best alternative or "No Project Alternative" would be selected for each of the three proposed reservoir sites, spreading basins, and pumping facilities.

Task 7—Prepare Implementation Schedule: An implementation schedule would be prepared for the selected alternative that would include the development of additional studies required to verify project size and types of components, preliminary design, final design, environmental documentation, permitting, and construction.

Task 8—Develop Cost Estimates: Capital cost and operational and maintenance costs would be estimated. A benefit-cost estimate would be prepared, and funding alternatives would be evaluated.

Task 9—Legal/Regulatory/Environmental Reconnaissance Study (Permitting Requirements): This proposal is for the first phase, Feasibility Study, of a phased project that includes environmental documentation and permitting as project Task 8. In Task 8, GCID would identify project permit requirements and the appropriate level of National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) environmental documentation that would be required for the project to be constructed. The NEPA/CEQA documentation may be tiered off the CALFED Programmatic Environmental Impact Statement/Environmental Impact Report (EIS/EIR) and incorporate appropriate mitigation measures from the CALFED Record of Decision. The permitting requirements and appropriate level of NEPA/CEQA documentation (i.e., Environmental Assessment/Initial Study [EA/IS] versus EIS/EIR) cannot be definitively identified until feasibility studies are completed and preliminary design is underway during a subsequent project phase. GCID proposes that all necessary permits identified during Phase 1 would be acquired, and environ-

mental documentation would be completed during the design phase, prior to initiation of construction. Funding of the feasibility study and the subsequent design phase would, therefore, culminate in completion of the environmental documentation and permitting requirements before construction would be initiated.

Task 10—Prepare Feasibility Report: A draft report would be prepared in order to distribute it to the public, conduct public hearings to address written and verbal comments, and prepare a final report for public distribution. This report would be available for reference for other studies by CALFED and other funding programs.

Bar Chart Schedule: The proposed project schedule and quarterly expenditure projection per quarter are shown in Figure 2. The allocation of costs per task is shown in Table 1.

TABLE 1
Allocation of Costs by Task

Task No.	Task Description	GCID Labor (\$)	Travel (\$)	Consultants (\$)	Total Costs (\$)	Required Project Funds (\$)
1	Management	25,000	3,000	72,000	100,000	75,000
2	Data Collection	24,000	3,200	31,800	59,000	35,000
3	Mapping	18,000	1,400	38,600	58,000	40,000
4	Modeling	12,000	2,000	208,000	222,000	210,000
5	Develop Alternatives	8,000	800	149,200	158,000	150,000
6	Evaluate Alternatives	2,000		111,000	113,000	111,000
7	Implementation Schedule	1,000		32,000	33,000	32,000
8	Cost Estimates	20,000	1,600	28,400	50,000	30,000
9	ROW/Permitting/Legal	2,000		10,000	12,000	10,000
10	Final Report			60,000	60,000	60,000
Total		112,000	12,000	741,000	865,000	753,000
Previous Funding						100,000
Required Funding						653,000
Requested Funding						100,000

3. Monitoring and Assessment

Progress toward the QO would be measured against a detailed workplan that would be developed for the project. Each task would be separated into various subtasks, each with a cost and deliverables. An action item list would be initially prepared and monitored throughout the project and would be addressed at each progress meeting, to be held at a minimum of each month.

An early task in the proposed project would be to compile existing water quality data on CBD. Where sufficient data are unavailable, monitoring would occur during the project. The development of a Districtwide watershed management program that includes flow and water quality monitoring capabilities would contribute to the overall management of the Sacramento-San Joaquin basin for beneficial uses, including habitat restoration.

Task 9 of the proposed feasibility study for the reservoirs is to identify all legal and regulatory issues that would affect project implementation. The cost of compliance and mitigation

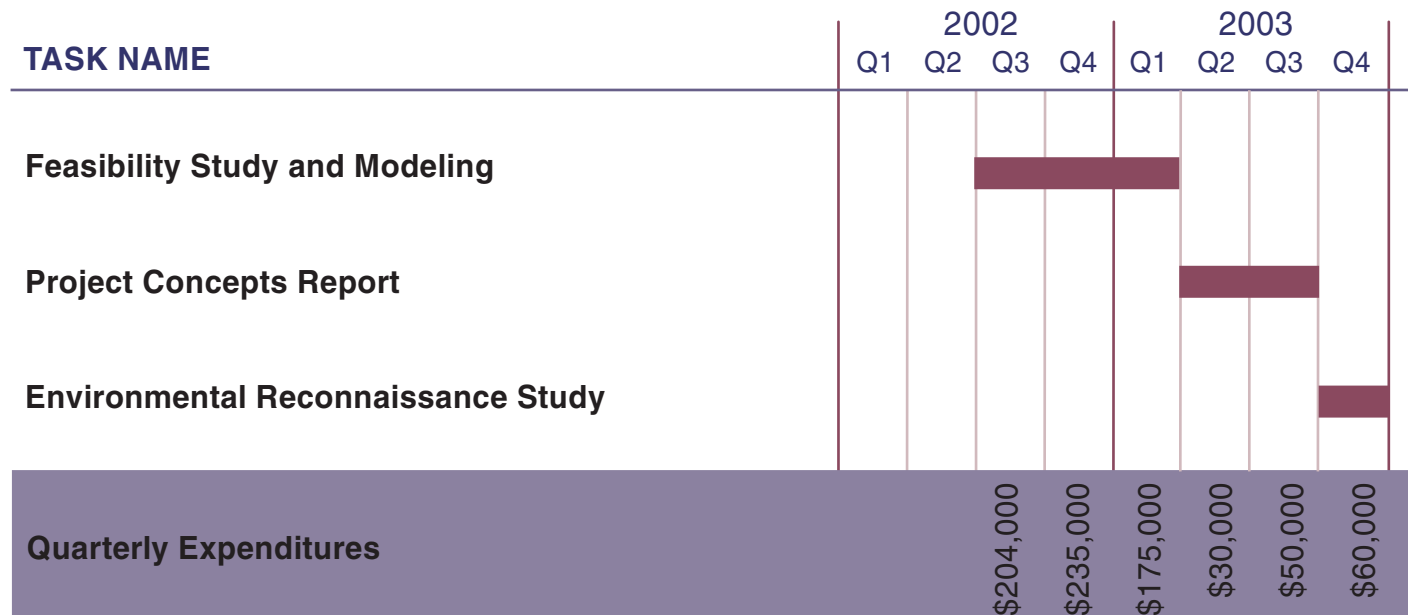


FIGURE 2
PRELIMINARY IMPLEMENTATION SCHEDULE
 GCID REGULATORY RESERVOIRS AND
 OFF-CANAL STORAGE FEASIBILITY STUDY

is not included in this proposal. Development of the three reservoirs and associated components would require compliance with CEQA and possibly NEPA, particularly if federal funding is involved. CEQA and NEPA compliance, in turn, require consideration of the state and federal Endangered Species Acts and laws and regulations governing treatment of cultural resources. If wetlands are potentially affected by the reservoir projects, Section 404 of the Clean Water Act would apply, which would require wetland delineation and an impact mitigation plan to be overseen by the Corps. Under Section 404, Section 106 of the National Historic Preservation Act also would apply, which would ensure prescribed treatment of affected cultural resources.

C. Qualifications

1. Project Manager

O. L. “Van” Tenney, GCID General Manager

B.S., Engineering Mechanics

Van Tenney’s 31 years of experience includes 20 years managing utilities and irrigation districts. He has been responsible for customer service, personnel management, engineering operations, system maintenance, and construction of capital improvements. For the Maricopa-Stanfield Irrigation District he administered a \$100 million, 5-year capital improvement program to construct a water distribution system. For GCID, he is administering design of the permanent fish screening and river restoration facilities for the Main Pump Station in cooperation with state and federal agencies.

Van has participated in a variety of statewide groundwater and water transfer forums, including CALFED’s Water Transfer Advisory Group, CALFED’s Conjunctive Use Advisory Team and CALFED’s Ag Use Efficiency steering Committee. He is also the current Chairman of the Northern California Off-stream Storage Technical Advisory Committee, and a member of the Glenn County Water Advisory Committee.

Van implemented a major in-lieu recharge program while working for Maricopa-Stanfield Irrigation District in Arizona. This project involved the management of nearly 400 deep-water wells and the development of an inter-agency drought protection program for the cities of Phoenix and Tucson. He has also been involved in numerous water management issues with respect to the protection and enhancement of threatened and endangered species while at GCID.

2. External Cooperators

GCID is in partnership with all participants in the BWMP and would disseminate project information through these partnerships. The project is a recommendation of the BWMP and the Agreement and would potentially benefit all parties, thereby strengthening and promoting these partnerships. Formal partnerships have not been developed among the numerous potential benefactors of the project. Development of these partnerships would be part of the implementation of the project. For example, for the development of a groundwater and Stony Creek surface supply, GCID will need to work closely with TCCA, the Orland Unit Water

User's Association, Tehama and Glenn counties, Capay Rancho Water District, and the private landowners using groundwater supplies.

As noted elsewhere, previous GCID projects, particularly those that relate to habitat restoration such as the fish screening project and the refuge water supply project, have been partially funded by a variety of state and federal agencies. GCID has contributed millions of dollars of its own funds for these projects. GCID projects have had broad support among local, state, and federal agencies, local landowners and District customers, and other stakeholders, including conservation groups. Along with CDFG, USFWS, Reclamation, and DWR, it is anticipated that the project would receive local support, including Glenn and Colusa counties, Reclamation District 2047, Princeton-Codora-Glenn Irrigation District, Provident Irrigation District, and Maxwell Irrigation District. GCID fosters such support through effective public participation and outreach programs. Sites for the reservoirs and associated conveyance systems would be purchased or leased, as needed, from willing parties. The District's legal counsel, Somach, Simmons & Dunn, would address any project-related land ownership and water rights issues.

D. Benefits and Costs

1. Budget Justification

The estimated project cost is \$865,000, and the allocation of costs by task is shown above in Table 1. The budget costs and a breakdown of the project cost as requested by CALFED is shown in Table 2, the Breakdown Worksheet.

2. Cost Sharing

GCID's cost-share contribution to this study is estimated at \$112,000, approximately 13 percent of the total project costs. The costs incurred by the District are expected to be a part of the local cost share contribution. An estimated budgetary synopsis by task of GCID's labor costs is available in Table 1 under Section B-1 (Methods, Procedures, and Facilities).

3. Potential Benefits to be Realized and Information to be Gained

The proposed feasibility study is expected to lead to the development of a large-scale project that would produce direct water supply, water management, water quality, and environmental benefits. The majority of the water supply benefits would most likely be derived from increased in-stream flows. The storage reservoirs would retain water from sources that may not typically provide supply when there is demand, e.g., winter flood flows. By offering another source of supply during high demand (e.g., irrigation season) to downstream water purveyors, diversion from the Sacramento River could consequently be reduced by an equal amount, possibly up to 35,000 acre-feet. The decreased surface water diversions could be mutually beneficial to in-basin and out-of-basin users. Additional water supply benefits include increased reliability of supply to stakeholders and refuges during critical dry years. Although the reservoir is likely to be low during prolonged periods of drought (more than 1 or 2 years), the initial availability of supply would provide water otherwise unavailable to downstream users. The reservoirs would allow an increase in system flexibility, affording the

TABLE 2
Budget Summary

		Present Value	Requested Funds	
Item		(\$)	(\$)	Description and Justification
(a)	Direct Labor Hours	\$0	\$0	Not applicable—Work for this feasibility shall be contracted out to consultants; GCID participation is part of the District's cost share
(b)	Salaries	\$0	\$0	Not applicable—Work for this feasibility shall be contracted out to consultants; GCID participation is part of the District's cost share
(c)	Benefits	\$0	\$0	Not applicable—Work for this feasibility shall be contracted out to consultants; GCID participation is part of the District's cost share
(d)	Travel	\$0	\$0	Not applicable—Work for this feasibility shall be contracted out to consultants; GCID participation is part of the District's cost share
(e)	Supplies and Expendables	\$0	\$0	Not applicable—Work for this feasibility shall be contracted out to consultants; GCID participation is part of the District's cost share
(f)	Services or Consultants	\$740,000	\$740,000	Engineering services shall be provided by consultants. Initial stages of the study are underway, but require additional funding to proceed.
(g)	Equipment	\$0	\$0	
	Sub-total (a-g)	\$740,000	\$740,000	
(h)	Other Direct Costs			
	Review	\$8,000	\$8,000	Engineering services shall be provided by consultants.
	Right-of-Way/Legal	\$5,000	\$5,000	Legal and Right-of-Way consultations shall be provided by GCID's attorney, Somach, Simmons & Dunn
	Sub-total (h)	\$13,000	\$13,000	
(i)	Total Direct Cost	\$753,000	\$753,000	
(j)	Indirect Costs	\$0	\$0	Not applicable—Work for this feasibility shall be contracted out to consultants; GCID participation is part of the District's cost share
(k)	Total Costs	\$753,000^a	\$753,000	

^aTotal FS cost is estimated at \$865,000. The District will contribute its services to administer the contract. These services, which constitute the District's local cost-share contributions, are estimated at \$112,000.

District flexibility with diversions that could thereby increase in-stream flows when most needed.

Regulating reservoirs and off-canal storage could improve management of existing water supplies by accumulating pulse flows, which are a result of normal operations, farm releases, and weather, in the system that may not otherwise be efficiently utilized. The current state of the GCID conveyance system can result in unintentional, yet often unavoidable, tailender problems such as spills. These flows have been estimated at a maximum of 2,000-cfs weekly. Downstream water users would be able to improve their water management decisions by using increased regulation and storage of pulse flows. Managing and controlling flow fluctuation could yield flow benefits of hundreds of acre-feet daily and minimize unwanted anadromous fish attractions flow within the CBD.

Water quality benefits would generally stem from increased in-stream flows and water retention. Improvements to both temperature and constituent properties of the river and outflows from the reservoirs would be the most probable results of the increased in-stream flows and water storage. Depending upon implementation and configuration of the project, there may be temperature improvements to the GCID intra-district supply. A regulating reservoir could essentially increase the temperature of the supply, making the water more desirable for downstream rice farmers.

Environmental benefits associated with a large-scale project would be quantified through various stages of development from feasibility study through final design. Some benefits that have been identified thus far include (1) increased supply to the Sacramento-San Joaquin Delta, (2) improved aquatic/riparian habitat, and (3) more reliable supply to wildlife refuges. During dry years, the additional in-stream river flows afforded by the decreased diversions would provide much-needed habitat for aquatic and riparian species, increased available supply to downstream users, and potentially increased inflow to the Delta.

4. Benefit Realized and Information Gained versus Costs

Water supply benefits are predicated upon the conclusions of the study, but potentially could be on the order of 5,000 to 35,000 acre-feet per year (ac-ft/yr.) in direct supply (i.e. not including potential drainwater reuse.) The \$753,000 study could yield a project of significant magnitude and scope with potentially far-reaching water supply, water management, water quality, and environmental benefits (as discussed above).

E. Outreach, Community Involvement, and Acceptance

The proposed project is the first step and outgrowth of the BWMP and is tightly linked to this essential initiative. The BWMP has a strong public information and involvement component. During the development of the BWMP, numerous meetings have been and continue to be held, including monthly management meetings of participating water contractors (i.e., Settlement Contractors) with DWR and Reclamation staff, and presentations made. Informational meetings have been and are continuing to be held with Settlement Contractor Boards of Directors, as well as other water users and environmental interest groups to solicit stakeholder input and disseminate information about the BWMP.

Because most of the project encompasses disadvantaged rural communities, outreach efforts would include the economically disadvantaged communities, including extending the benefits of the feasibility study to all tribal entities. By making more efficient use of water, the project would benefit the Bay-Delta ecosystem and all Californians.

Training, Employment, and Capacity Building: Although the project per se does not directly involve training, employment, or capacity building, it does support the ultimate goal of more efficient management of agricultural water supplies. This, in turn, would potentially make more water available for beneficial uses. A more reliable, better managed water supply would help sustain the California economy by accommodating growth in industry and agriculture, including growth in employment opportunities in all economic sectors.

Disseminating Information: The proposed project is among the recommendations of the BWMP for more efficiently managing the water supply, improving water quality and water supply reliability, and providing additional water for beneficial uses, including ecosystem improvements. The BWMP participants include all of the Sacramento Valley Settlement Contractors, DWR, and Reclamation. Information developed during this project would be disseminated to these agencies and to the public via the BWMP public involvement process. The ongoing planning effort associated with the development of the BWMP provides a formal framework for disseminating inflow/outflow information. The participants are keenly aware of the need to share this information to ensure successful water supply management at the sub-basin level.

The project files would be stored at GCID's office. A website would be established for the project, affording access of information to all parties. The website would maintain an updated project schedule, dates of upcoming meetings, minutes of meetings, and other project information.